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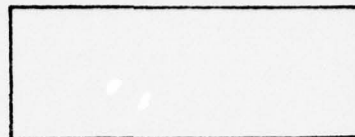
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ACCESSORY KIT  
MULTI-PURPOSE SHELTER  
MUST

(MEDICAL UNIT SELF-CONTAINED TRANSPORTABLE)

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APRIL 1977



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REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER Technical Report No. 7705 ✓	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Accessory Kit Multi-Purpose Shelter, MUST (Medical Unit Self-Contained Transportable).	5. TYPE OF REPORT & PERIOD COVERED Interim Report. August 1976 to April 1977	6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Neil H. Patzer	8. CONTRACT OR GRANT NUMBER(s) TR-7705	
9. PERFORMING ORGANIZATION NAME AND ADDRESS Commander, US Army Medical Bioengineering Research and Development Laboratory, ATTN: SGRD-UBE, Fort Detrick, Frederick, MD 21701	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS 64717A 3S764717D832.00.019	
11. CONTROLLING OFFICE NAME AND ADDRESS US Army Medical Research & Development Command ATTN: SGRD-RO-D Washington, D.C. 20314	12. REPORT DATE April 1977	13. NUMBER OF PAGES Nine
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) 12/12p	15. SECURITY CLASS. (of this report) UNCLASSIFIED	15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report)		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Accessory Kit                      MUST Kit                                      Ward Container Multi-Purpose Shelter		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This report covers the requirements for the Accessory Kit to be used as a component of the Army Field Hospital MUST. The kit is intended for installation in the MUST Multi-Purpose Shelter when used for medical support functions such as: personnel comfort stations; ward service units; medical staff offices; headquarters facilities; etc. The items of equipment when installed in a Multi-Purpose Shelter shall provide for control and distribution of: electrical power, temperature controlled air, lights, (Cont'd)		

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20. ABSTRACT (Continued):

→ water and telephone. All basic utilities will be supplied to the shelter by the MUST Power and Utility Pack.

An Accessory Kit to furnish the above basic utilities will include the following:

1. Air Ducts, Adapters, and Louvers.
2. Electrical Power Cables.
3. Electric Lights and Convenience Outlets.
4. Water Hoses, Supply and Drain.
5. Phone Jacks.
6. Utility Distribution Panel.

In 1970 AiResearch Manufacturing Company, Division of the Garrett Corporation, Phoenix, Arizona, prepared a specification for an Accessory Kit and later assembled some prototype Kits. These prototypes demonstrate the feasibility of such a kit.

In order to up-date and finalize the original concept, it is recommended that a new Accessory Kit be: designed; assembled; tested; and evaluated for Type Classification.

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## PREFACE

The U.S. Army Medical Research and Development Command (USAMRDC), Washington, D.C., initiated the Task "Accessory Kit, MUST Service Ward Container", Work Unit No. 3S764717D832.00.019 and assigned it to the U.S. Army Medical Bioengineering Research and Development Laboratory (USAMBRDL), Fort Detrick, Frederick, Maryland 21701, 16 April 1975. The task was originally assigned to NARADCOM. After some preliminary investigation, it was reassigned to USAMBRDL for completion. This Technical Report is in response to the work unit established.

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## TABLE OF CONTENTS

	<u>Page</u>
PREFACE . . . . .	1
TABLE OF CONTENTS . . . . .	2
INTRODUCTION. . . . .	3
Background. . . . .	3
Objective . . . . .	3
Approach. . . . .	3
DISCUSSION. . . . .	3
CONCLUSION. . . . .	5
RECOMMENDATION. . . . .	5
REFERENCES. . . . .	6
APPENDIX. . . . .	8
Table 1 - Accessory Kit Multi-Purpose Shelter, MUST .	8
DISTRIBUTION LIST . . . . .	9

## INTRODUCTION

BACKGROUND. AiResearch Manufacturing Company, documented an Accessory Kit Specification (Reference 1) for the MUST Service Ward Container, now called the Multi-Purpose Shelter (MPS). Later, Accessory Kits were assembled and installed in Ward Containers that were part of the prototype MUST Utility Room Complex (Reference 2), now referred to as the MUST Sanitation Complex. The Sanitation Complex, including Ward Containers and Accessory Kits, were tested (Reference 3) by the U.S. Army General Equipment Testing Activity (GETA).

OBJECTIVE. The objectives of this report are to: (1) up-date the list of items for the Accessory Kit; (2) assess the feasibility of the Up-Date Kit; and (3) recommended action.

APPROACH. The approach was to: (1) review, the AiResearch specifications; (2) examine the AiResearch prototypes; (3) review the MUST Manual (Reference 4) for current and potential uses of the MPS; (4) determine the basic utilities required for these uses; (5) list the utility requirements common to all uses; (6) up-date the list of items in the Accessory Kit required to supply, distribute and control the basic utilities; (7) assess the feasibility of such a kit and (8) recommend appropriate action.

## DISCUSSION

The MUST MPS is a rigid paneled metal unit which can be expanded on one side and enclosed by insulated fabric panels. In the folded mode, it is used as a shipping container for the MUST Inflatable Shelter and related medical material.

In the expanded mode, depending on the auxiliary equipment used, the MPS serves as: a shower, lavatory or toilet facility, a nurses station,



Commanding Officer's Office, store room, or a utility room for: emergency medical treatment, intensive care unit or central medical supply and maintenance unit. The majority of these operational uses require temperature controlled air, electrical power, lights, water and telephone. These basic utilities will be furnished by the MUST Power Unit and Utility Pack.

The AiResearch Specification included all of the items required to furnish the basic utilities. However, since the completion of the Kit Specification by AiResearch, the MPS has been Type Classified (Reference 5, 6, 7), FSN 5410-809-6634, to include some of the items originally included in the Accessory Kit. Some of the items in the original specification are no longer available and other items require up-dating.

The TMs' for the MUST Expandable Shelter (Reference 8, 9, 10), MUST Inflatable Shelter (Reference 11, 12, 13, 14), and MUST Power Unit, Utility Pack (Reference 15, 16), were reviewed for interface requirements and Type Classified items required for the Accessory Kit. Wherever possible, Type Classified items already in the DOD System (Reference 17) were listed in the up-dated Accessory Kit. The Non-Standard (NS) items listed are items to be designed, tested and evaluated for Type Classification. Table No. 1 lists the items recommended for inclusion in the Accessory Kit. Any additional or special items required to connect, supply or control the utilities in a Multi-Purpose Shelter, that are not required for all Multi-Purpose Shelter applications, will be part of the kit for that special function, mission or application.

The electrical supply cables, air ducts and dual hot and cold water supply hose, are the same as used to connect the Utility-Pack to the Expandable and Inflatable Shelters. This means that all utility interface connections between all shelters and Utility Pack will be the same.

#### CONCLUSION

A detailed study of Table No. 1 shows that all items either have been or could be fabricated from materials commercially available in this country. Therefore, it is feasible to assemble this kit. This is confirmed by kits previously assembled.

#### RECOMMENDATION

It is recommended that an Accessory Kit be designed, assembled, tested and evaluated for Type Classification.

#### REFERENCES

1. Specification, Accessory Kit, Ward Container for Medical Unit, Self Container Transportable (MUST), Report No. SC-5845A, J. W. Shaw/H. E. Etches, August 14, 1970, Part 891560-1, Contract DADA-17-67-C-7075, AiResearch Manufacturing Company of Arizona, Phoenix, Arizona.
2. Operation and Maintenance Instructions, Central Utility Room Complex Report No. 4A-181, The Garrett Corporation, AiResearch Manufacturing Company of Arizona, Phoenix, Arizona 85034, July 10, 1970.
3. Final Report of Engineering Test of Water and Waste Management System Medical Unit, Self-Contained, Transportable, TECOM Project No. 7-ES-205-000-014/016, Jarman, Thornton, Wold, Dunstan, Laughlin, Palmer, and Smith, June 1971.
4. ST 8-165 Medical Unit Self-Contained Transportable (MUST) Systems Manual for MUST Equipped Medical Units, Academy of Health Sciences, U.S. Army.
5. TM 10-5410-223-10 Operators Manual, Container, Service, Ward, Rigid Construction FSN 5410-809-6634.
6. TM 10-5410-223-24P Organizational, Direct and General Support, Maintenance Repair Parts and Special Tool List, Container, Service, Ward, Rigid Construction FSN 5410-809-6634.
7. TM 10-5410-223-24P/I Organizational, Direct and General Support, Maintenance Repair Parts and Special Tools List, Shelter, Multi-Purpose, Medical Unit, Self Container, Transportable (MUST) (Brunswick Model CW1) FSN 5410-809-6634.
8. TM 10-5410-221-10 Operators Manual for Shelter, Expandable, Rigid Construction, with Air Lock (Zero Manufacturing Corporation, Model SEU-2) FSN 5410-933-9387.
9. TM 10-5410-221-24 Organizational, Direct and General Support Maintenance Manual, Shelter, Expandable, Rigid Construction with Air Lock (Zero Manufacturing Corporation, Model SEU-2) FSN 5410-933-9387.

10. TM 10-5410-221-24P Organizational, Direct and General Support Maintenance Repair Parts and Special Tools List, Shelter, Expandable, Rigid Construction with Air Lock (Zero Manufacturing Corporation, Model SEU-2) FSN 5410-933-9387.
11. TM 10-5410-222-10 Operators Manual, Inflatable Shelter with Air Lock (AiResearch Manufacturing Company, Model SIW-2) FSN 5410-933-9388.
12. TM 10-5410-222-23 Organizational and Direct Support Maintenance Manual, Shelter, Inflatable, with Air Lock (AiResearch Manufacturing Company, Model SIW-2) FSN 5410-933-9388.
13. TM 10-5410-222-23P Organizational and Direct Support Maintenance Repair Parts and Special Tools List, Shelter, Inflatable, with Air Lock (AiResearch Manufacturing Company, Model SIW-2) FSN 5410-933-9388.
14. TM 10-5410-222-23P/1, Organizational and Direct Support Maintenance Repair Parts and Special Tools List, Shelter, Inflatable, MUST (Firestone Coated Fabric Company, Model MUST FCF) NSN 5410-00-933-9388.
15. TM 5-6115-434-12 Operator and Organizational Maintenance Manual, Power Unit, Utility Pack, Gas Turbine Engine Driven (AiResearch Model PPU 85-5) Non-Winterized FSN 6115-937-0929, (AiResearch Model PPU 85-4) Winterized FSN 6115-134-0825.
16. TM 5-6115-434-20P Organizational Maintenance Repair Parts and Special Tools List, Power Unit, Utility Pack, Gas Turbine Engine Driven (AiResearch Model PPU 85-5) Non-Winterized, FSN 6115-937-0929, (AiResearch Model PPU 85-4) Winterized, FSN 6115-134-0825.
17. Letter, DRSTS-MFP, October 15, 1976, subject: Integral Component of End Items (ICOEI) for Expandable, Multi-Purpose, and Inflatable Shelters and the MUST Utility Element, Chief, Troop Support Systems Division, TROSCOM.



APPENDIX

TABLE 1 - ACCESSORY KIT, MULTI-PURPOSE SHELTER, MUST

ITEM	NATIONAL STOCK NUMBER (NSN)	PART DESCRIPTION	QUAN. PER MPS
1	NS	Utility Distribution Panel	1
		<u>ELECTRICAL GROUP</u>	
2	6150-00-467-2541	Cable, Power, 60 Hz	1
3	6150-00-863-8595	Cable, Power, 400 Hz	1
4	5975-00-878-3791	Rod, Ground, 3 Section, 9 Feet Long	1
5	NS	Cable, Power, 120V - 60/400 Hz, Acc.	1
6	NS	Junction Box, 60/400 Hz, Acc. and Lights	1
7	NS	Cable, Power, 120V - 400 Hz, Lights	1
8	NS	Cable, Power, 120V - 60 Hz, Acc., Short	2
9	NS	Cable, Power, 120V - 60 Hz, Acc., Long	2
10	5931-01-009-9812	Receptacle, Duplex, 120V - 60 Hz	2
11	NS	Bracket, Mounting, Receptacle	2
12	NS	Clamp, Cable	40
		<u>LIGHTING GROUP</u>	
13	6210-00-115-1098	Light, Fluorescent, 120V - 400 Hz	2
14	NS	Clamp, Light	4
15	NS	Bracket, Mounting, Light	4
		<u>CONDITIONED AIR GROUP</u>	
16	5410-00-807-5811	Adapter, Duct	2
17	4130-00-863-8636	Duct Assembly	2
18	NS	Louver	2
		<u>PLUMBING SYSTEM</u>	
19	4720-00-003-0979	Hose, Dual, Water, Heated	1
20	NS	Hose, Drain	1

NS = Non-Standard

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